

**WHAT IS CLAIMED IS:**

1. A process for identifying a chemical compound modifying the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism, wherein said process comprises the following steps:

- a) providing at least one cell which contains at least one GPCR-dependent signal transduction pathway and which produces one or more than one G-protein;
- b) providing at least one chemical compound to be studied;
- c) contacting the cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the cell of a) by means of a signal transduction pathway-dependent measurable signal.

2. The process as claimed in claim 1, wherein the cell provided according to a) produces at least two G-proteins.

3. The process as claimed in claim 1, wherein the cell provided according to a) produces at least two G-proteins selected from -6qi4myr, -6qs5myr, -6qi4, -6qs5, and Gα16.

4. The process as claimed in claim 2, wherein the cell provided according to a) produces at least two G-proteins selected from -6qi4myr, -6qs5myr, -6qi4, -6qs5, and Gα16.

5. The process as claimed in claim 1, wherein the cell provided according to a) produces at least one G-protein selected from -6qi4myr, -6qs5myr, -6qi4, and -6qs5.

6. The process as claimed in claim 2, wherein the cell provided according to a) produces at least one G-protein selected from -6qi4myr, -6qs5myr, -6qi4, and -6qs5.

7. The process as claimed in claim 1, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

8. The process as claimed in claim 2, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

9. The process as claimed in claim 3, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

10. The process as claimed in claim 4, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

11. The process as claimed in claim 5, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

12. The process as claimed in claim 6, wherein the cell provided according to a) produces at least one protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:8.

13. The process as claimed in claim 1, wherein the cell provided according to a) is the cell of a vertebrate species, an insect species, a yeast species, or a *C. elegans*.

14. The process as claimed in claim 13, wherein the cell provided is a HeLa, 293, COS or CHO cell, or a cell of *Saccharomyces cerevisiae*.

15. The process as claimed in claim 1, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

16. The process as claimed in claim 2, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

17. The process as claimed in claim 3, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

18. The process as claimed in claim 4, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

19. The process as claimed in claim 5, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

20. The process as claimed in claim 6, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

21. The process as claimed in claim 7, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

22. The process as claimed in claim 8, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

23. The process as claimed in claim 9, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

24. The process as claimed in claim 10, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

25. The process as claimed in claim 11, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

26. The process as claimed in claim 12, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

27. The process as claimed in claim 13, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

28. The process as claimed in claim 14, wherein the intracellular  $\text{Ca}^{2+}$  concentration is the signal transduction pathway-dependent measurable signal.

29. The process as claimed in claim 1, wherein the process is used for identifying a pharmaceutical.

30. The process as claimed in claim 2, wherein the process is used for identifying a pharmaceutical.

31. The process as claimed in claim 3, wherein the process is used for identifying a pharmaceutical.

32. The process as claimed in claim 4, wherein the process is used for identifying a pharmaceutical.

33. The process as claimed in claim 5, wherein the process is used for identifying a pharmaceutical.

34. The process as claimed in claim 6, wherein the process is used for identifying a pharmaceutical.

35. The process as claimed in claim 7, wherein the process is used for identifying a pharmaceutical.

36. The process as claimed in claim 8, wherein the process is used for identifying a pharmaceutical.

37. The process as claimed in claim 9, wherein the process is used for identifying a pharmaceutical.

38. The process as claimed in claim 10, wherein the process is used for identifying a pharmaceutical.

39. The process as claimed in claim 11, wherein the process is used for identifying a pharmaceutical.

40. The process as claimed in claim 12, wherein the process is used for identifying a pharmaceutical.

41. The process as claimed in claim 13, wherein the process is used for identifying a pharmaceutical.

42. The process as claimed in claim 14, wherein the process is used for identifying a pharmaceutical.

43. The process as claimed in claim 15, wherein the process is used for identifying a pharmaceutical.

44. The process as claimed in claim 16, wherein the process is used for identifying a pharmaceutical.

45. The process as claimed in claim 17, wherein the process is used for identifying a pharmaceutical.

46. The process as claimed in claim 18, wherein the process is used for identifying a pharmaceutical.

47. The process as claimed in claim 19, wherein the process is used for identifying a pharmaceutical.

48. The process as claimed in claim 20, wherein the process is used for identifying a pharmaceutical.

49. The process as claimed in claim 21, wherein the process is used for identifying a pharmaceutical.

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50. The process as claimed in claim 22, wherein the process is used for identifying a pharmaceutical.

51. The process as claimed in claim 23, wherein the process is used for identifying a pharmaceutical.

52. The process as claimed in claim 24, wherein the process is used for identifying a pharmaceutical.

53. The process as claimed in claim 25, wherein the process is used for identifying a pharmaceutical.

54. The process as claimed in claim 26, wherein the process is used for identifying a pharmaceutical.

55. The process as claimed in claim 27, wherein the process is used for identifying a pharmaceutical.

56. The process as claimed in claim 28, wherein the process is used for identifying a pharmaceutical.

57. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 1.



58. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 2.

59. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 3.

60. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 4.

61. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 5.

62. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 6.

63. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 7.

64. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 8.

65. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 9.

66. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 10.

67. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 11.

68. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 12.

69. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 13.

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70. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 14.

71. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 15.

72. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 16.

73. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 17.

74. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 18.

75. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 19.

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82. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 26.

83. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 27.

84. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 28.

85. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 29.

86. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 30.

87. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 31.

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88. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 32.

89. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 33.

90. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 34.

91. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 35.

92. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 36.

93. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 37.

94. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 38.

95. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 39.

96. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 40.

97. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 41.

98. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 42.

99. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 43.

100. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 44.

101. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 45.

102. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 46.

103. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 47.

104. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 48.

105. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 49.



106. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 50.

107. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 51.

108. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 52.

109. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 53.

110. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 54.

111. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 55.

112. A compound which modifies the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism and which is identified by the process as claimed in claim 56.

113. A polynucleotide sequence coding for a polypeptide having the property of a G-protein, wherein the polypeptide sequence is selected from:

- a) SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8;
- b) a sequence according to a) lacking one or more amino acids;
- c) a sequence according to a) having an additional one or more amino acids; and
- d) an allelic variant of a sequence according to a).

114. A polynucleotide comprising a polynucleotide sequence selected from:

- a) SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, the corresponding sequence complementary thereto; and
- b) a polynucleotide sequence hybridizing with a polynucleotide sequence according to a) under stringent conditions.

115. The polynucleotide as claimed in claim 113, wherein the polynucleotide is part of a recombinant vector construct.

116. The polynucleotide as claimed in claim 114, wherein the polynucleotide is part of a recombinant vector construct.

117. The polynucleotide as claimed in claim 115, wherein the recombinant vector construct is an expression vector usable in eukaryotes and/or prokaryotes.

118. The polynucleotide as claimed in claim 116, wherein the recombinant vector construct is an expression vector usable in eukaryotes and/or prokaryotes.

119. The polynucleotide as claimed in claim 117, wherein the expression vector contains a constitutive and/or inducible promoter.

120. The polynucleotide as claimed in claim 118, wherein the expression vector contains a constitutive and/or inducible promoter.

121. A host cell comprising a polynucleotide as claimed in claim 113.

122. A host cell comprising a polynucleotide as claimed in claim 114.

123. A host cell comprising a polynucleotide as claimed in claim 115.

124. A host cell comprising a polynucleotide as claimed in claim 116.

125. A host cell comprising a polynucleotide as claimed in claim 117.

126. A host cell comprising a polynucleotide as claimed in claim 118.



136. The host cell as claimed in claim 128, wherein the host cell is a human cell.

137. The host cell as claimed in claim 121, wherein the host cell is the cell of a vertebrate species, an insect species, a bacterial species, a yeast species, or *C. elegans*.

138. The host cell as claimed in claim 122, wherein the host cell is the cell of a vertebrate species, an insect species, a bacterial species, a yeast species, or *C. elegans*.

139. The host cell as claimed in claim 123, wherein the host cell is the cell of a vertebrate species, an insect species, a bacterial species, a yeast species, or *C. elegans*.

140. The host cell as claimed in claim 124, wherein the host cell is the cell of a vertebrate species, an insect species, a bacterial species, a yeast species, or *C. elegans*.

141. The host cell as claimed in claim 125, wherein the host cell is the cell of a vertebrate species, an insect species, a bacterial species, a yeast species, or *C. elegans*.



149. The host cell as claimed in claim 141, wherein the cell is a HeLa, 293, COS or CHO cell, an *Escherichia coli* cell or *Saccharomyces cerevisiae* cell.

150. The host cell as claimed in claim 142, wherein the cell is a HeLa, 293, COS or CHO cell, an *Escherichia coli* cell or *Saccharomyces cerevisiae* cell.

151. The host cell as claimed in claim 143, wherein the cell is a HeLa, 293, COS or CHO cell, an *Escherichia coli* cell or *Saccharomyces cerevisiae* cell.

153. The host cell as claimed in claim 144, wherein the cell is a HeLa, 293, COS or CHO cell, an *Escherichia coli* cell or *Saccharomyces cerevisiae* cell.

153. A method of producing a host cell, wherein a polynucleotide as claimed in claim 115 is introduced into a eukaryotic or prokaryotic cell.

154. A method of producing a host cell comprising a polynucleotide sequence selected from:

- a) SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, or the corresponding complementary sequence thereto; and
- b) a polynucleotide hybridizing with a polynucleotide sequence according to a) under stringent conditions,
- c) wherein a polynucleotide as claimed in claim 116 is introduced into a eukaryotic or prokaryotic cell.

155. A method of producing a host cell comprising a polynucleotide sequence selected from:

- a) SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, or the corresponding complementary sequence thereto; and
- b) a polynucleotide hybridizing with a polynucleotide sequence according to a) under stringent conditions,
- c) wherein a polynucleotide as claimed in claim 117 is introduced into a eukaryotic or prokaryotic cell.

156. A method of producing a host cell comprising a polynucleotide sequence selected from:

- a) SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, or the corresponding complementary sequence thereto; and
- b) a polynucleotide hybridizing with a polynucleotide sequence according to a) under stringent conditions,
- c) wherein a polynucleotide as claimed in claim 118 is introduced into a eukaryotic or prokaryotic cell.

157. A method of producing a host cell, comprising a polynucleotide sequence selected from:

- a) SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, or the corresponding complementary sequence thereto; and
- b) a polynucleotide hybridizing with a polynucleotide sequence according to a) under stringent conditions,



158. A method of producing a host cell, comprising a polynucleotide sequence selected from:

159. A method of using the host cell as claimed in claim 121 in a process for identifying a chemical compound modifying the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism comprising:

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160. A method of using the host cell as claimed in claim 122 in a process for identifying a chemical compound modifying the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism comprising:

- a) providing said host cell;
- b) providing at least one chemical compound to be studied;
- c) contacting the host cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the host cell of a) by means of a signal transduction pathway-dependent measurable signal.

161. A method of using the host cell as claimed in claim 123 in a process for identifying a chemical compound modifying the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism comprising:

- a) providing said host cell;
- b) providing at least one chemical compound to be studied;
- c) contacting the host cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the host cell of a) by means of a signal transduction pathway-dependent measurable signal.

162. A method of using the host cell as claimed in claim 124 in a

- a) providing said host cell;
- b) providing at least one chemical compound to be studied;
- c) contacting the host cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the host cell of a) by means of a signal transduction pathway-dependent measurable signal.

163. A method of using the host cell as claimed in claim 125 in a

- a) providing said host cell;
- b) providing at least one chemical compound to be studied;
- c) contacting the host cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the host cell of a) by means of a signal transduction pathway-dependent measurable signal.



166. A method of using the host cell as claimed in claim 128 in a process for identifying a chemical compound modifying the action of at least one G-protein-coupled receptor (GPCR)-dependent signal transduction pathway of an organism comprising:

- a) providing said host cell;
- b) providing at least one chemical compound to be studied;
- c) contacting the host cell of a) with one or more of the chemical compounds of b);
- d) determining the quantitative or qualitative effect of the chemical compound or compounds of b) on the signal transduction pathway of the host cell of a) by means of a signal transduction pathway-dependent measurable signal.

167. A protein having an amino acid sequence selected from SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, and SEQ ID NO:10.

168. A process for preparing a protein as claimed in claim 167 comprising:

- a) providing a host cell;
- b) cultivating the host cell of a) in a growth medium suitable for the host cell and inducing expression of the protein;
- c) disrupting the cells and obtaining the cell material;
- d) removing the protein from other proteins of the disrupted cells of c).

